Astrology once permeated all religion, all science, and even politics; and the baneful influence of unfounded, unreasonable, or portentious predictions is not a modern affliction. Montaigne, the French philosopher and essayist of the sixteenth century, remarks that "a large sum of money was lost on 'Change at Rome by this prognostication of our ruin," referring to the prediction by Italian astrologers of the downfall of the French nation. Dean Swift, the powerful satirist, wrote "Predictions for the year 1708, by Isaac Bickerstaff, Esq.," to emphasize the absurdities and weaken the influence of long-range forecasters.

The infinite desirability of foreknowing the seasons for the benefit of husbandmen is at once the opportunity of charlatans and the justification of national weather services. It avails little to decry the methods of impostors or to brand them as fakirs; the court of final resort must always be a comparison of results, and such comparison every one can now make for himself. Weather maps showing the actual conditions on every day are now published by practically every civilized nation and are accessible to all; and all that is needed to cure the most implicit belief in almanac predictions is an honest comparison of these predictions for a single season with the actual occurrences as shown by these maps. Conspicuous instances of failure, such as those of the artificial rain makers, who, a decade ago, were given the fullest opportunity to test and exploit their theories, or the colorless results of the extensive campaign of bombardment as a protection against hail, conducted for several years in southern Europe, do not convince the credulous. They do serve, however, to illustrate the "confusion of tongues" among the prophets of these latter days, who bombard the skies to precipitate storms, and bombard the clouds to dissipate them. Government meteorologists are not alone in the denunciation of the fallacies, absurdities, and pernicious effects of so-called long-range forecasts. Professor Young, probably the foremost American astronomer, speaking of lunar influences, points out that the frequency of the moon's changes is so great that it is always easy to find instances by which to verify a belief that changes of the moon control conditions on the earth. A change of the moon necessarily occurs about once a week. All changes of the weather must therefore occur within three and three-fourths days of a change of the moon, and one-half of all changes ought to occur within forty-six hours of a change in the moon, even if there were no causal connection whatever. Now it requires only a very slight predisposition in favor of a belief in the effectiveness of the moon's changes to make one forget a few of the changes that occur too far from the proper time. Coincidence enough can easily be found to justify preexistent belief.

Those who are in a position to know are well aware that every possible effort is being made to extend our knowledge of the laws that control weather conditions, and meanwhile to give to those who are vitally concerned the most trustworthy information obtainable.

The problem of seasonal forecasts is receiving at the hands of the ablest and most painstaking students of both continents a comprehensive consideration that is certain to be fruitful and far-reaching in its ultimate results. So important and so pressing is this work and so promising is the field, that the Chief of the Weather Bureau is building and equipping a large observatory, wherein the best talent available will soon be employed to study the intricate and profound problems of the atmosphere, whose solution promises improvement over present methods and results in forecasting, and may lead in time to seasonal predictions on a truly scientific basis.

EFFECT OF RAINFALL ON THE PALM OIL TREE.

[*Extract from* British Colonial Reports—Annual, No. 427. Lagos. Report for 1903. Communicated by W. R. Buttenshaw, Imperial Department of Agriculture for the West Indies.]

The very remarkable shrinkage in the exports of 1903 as compared with those of 1902, as regards cacoa, palm kernels, and palm oil, is the result of highly unfavorable meteorological conditions, which well deserve special consideration. It is purely a question of rainfall.

As regards palm produce, the following pertinent paragraph may be quoted from the report of a commission to the governor of Lagos, in 1898:

The yield of fruit from the palm oil tree (*Elaeis guineensis*) varies according to rainfall. With a sufficiency of moisture the tree flowers every five or six weeks, and bears eight or nine mature bunches of fruit in the year, but if the rain supply is scanty the tree flowers only every ninth or tenth week, and the annual yield is reduced to about five bunches. In normal times the *Elaeis* bears eight heads (so-called nuts) in the year, but it follows a similar habit to the cocoanut, the heads being formed spirally and the axils of the leaves at regular intervals, which are long or short, according as the season is favorable. The mischief arising from insufficient rainfall does not finish with the number of heads, for the oil is extracted from the fibre of the thin outside layers of the fruit, which are either red, ripe, succulent and rich with oil, or starved, yellow, and destitute wholly or partially of oil, according to the amount of moisture afforded to the tree during the time the fruit has been maturing.

The following table has been prepared to show the yearly rainfall, in inches; the yearly export of palm oil, in gallons; and the export of palm kernels, in tons:

Year.	Rainfall.	Palm oil.	Palm kernels.
	Inches.	*Gallons.*	*Tons.*
1887	70.80		
1888	49.87	2,446,705	42,525
1889	61.61	3,349,011	32,715
1890	90.88	3,200,824	38,829
1891	64.26	4,204,835	42,342
1892	69.68	2,458,260	32,180
1893	82.55	4,073,055	51,456
1894	70.10	3,393,533	53,534
1895	80.62	3,826,392	46,501
1896	74.23	3,154,333	47,649
1897	51.10	1,858,968	41,299
1898	80.20	1,889,939	42,775
1899	83.46	3,292,881	49,501
1900	72.82	2,977,926	48,514
1901	112.59	3,304,055	57,176
1902	47.82	5,240,137	75,416
1903	70.08	3,174,060	63,568

The correlation between rainfall and the quantity of palm produce exported from the colony is shown in an unmistakable manner by the above figures. They are given here in detail, because the falling off in the exports of 1903 was not understood by British merchants.

It will be noticed that the effect of an unusually great or abnormally small rainfall is sometimes felt most in the exports of the following year. This arises from the fact that the rainfall is divided into the former and the latter rains. Thus, in 1901 there was the unprecedented fall of latter rain of 31 inches in September and October, the effects of which are seen in the record export of 1902.

An examination of the above figures will show that the export of palm oil is even more sensative to rainfall than the export of palm kernels.

The greatest rainfall, that of 1901, preceded the almost phenomenally large export of vegetable produce in 1902. The short rainfall of 1902 enabled an intelligent observer to predict with certainty a great falling off in produce in 1903.

SEASONAL RAINFALL RÉGIMES IN THE UNITED STATES.

Prof. V. Raulin, of Montfaucon, France, advocates the classification and publication of precipitation statistics by meteorological seasons in place of, or in addition to, the calendar months and year. In a recent letter he incloses a map, fig. 1, showing the division of the United States into "régimes" based on the seasonal precipitation, as determined from the data of Weather Bureau Bulletin D. Professor Raulin states:

* * * the climatic chart is very interesting and shows clearly that precipitation is abundant in the neighborhood of the Atlantic Ocean, and decreases in the interior as far as to the neighborhood of the Pacific

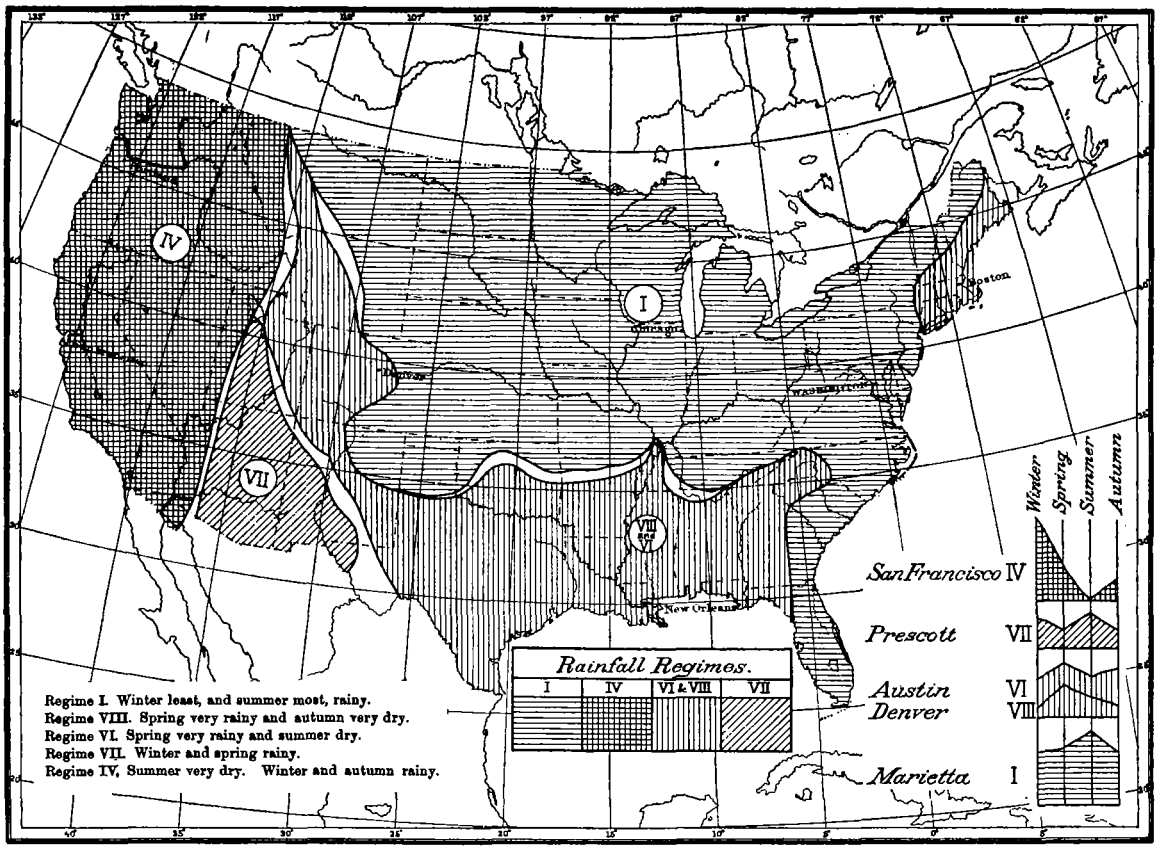

FIG. 1.—Rainfall régimes.

Ocean; viz, 60-50 inches on the Atlantic coast decrease to 40-30 in Mississippi and Missouri (St. Louis), to 20-15 in Colorado (Denver), to 10-5 in Arizona. Then it increases to 50-60 on the coast of California, and reaches 100 inches in the district of Juan de Luca by Neah Bay. But what the chart does not show is the influence, so important in Europe, of the ocean on the distribution of rain.

On the eastern coast, by the Atlantic, the greatest rainfall takes place in the spring and summer, while on the western coast, by the Pacific, the principal rainfall occurs in the fall and winter, with absolutely no rain in the summer, as in San Francisco.

It is also a fact that the Atlantic coast from New York to the southern end of Florida has the same regimen as the interior, which is the reverse of the conditions in Europe, where the coast districts always have more rain, as may be seen on my chart of France or on my chart of western Europe.

You will note on the accompanying map the continental normal régime, (I), the marine régime (IV), and the intermediate and semimarine régimes (VII, VIII, and VI). There are also other régimes at some isolated stations, but on account of the smallness of the map I can not indicate them. You will note that régime I (normal) occupies a large surface, both in the interior and on the Atlantic coast, that the modifications VIII and VI seem to be influenced by the Gulf of Mexico and the Pacific, and that the entire régime IV and modification VII are influenced by the Pacific Ocean.

For forty years I have been of the opinion that these régimes are of great importance to agriculture and industry, and that it would be useful to indicate the different zones of annual rainfall on the rainfall charts.

TROPICAL STORM OF OCTOBER 10 TO 20, 1900.

Mr. Paul DeGraw, Assistant Observer at Havana, Cuba, forwards a record of daily weather conditions at Havana during the tropical storm that apparently was central over or a little south of central Cuba on October 15, and remained stationary over southern Florida from the morning of the 17th until the morning of the 19th. Mr. DeGraw's report may be briefly summarized by saying that the wind was generally fresh to brisk from the northeast from October 10 to 15, reaching a maximum of 36 miles per hour on the 11th. The barometer fell slowly and continuously from the 8th to 3 a. m. on the 16th, when it reached 29.58 inches, and at 2:30 p. m. on that date the wind backed to northerly and diminished in force. Cloudy weather with frequent light showers prevailed from the 11th to the 16th, followed by clear weather on the 17th, but showers again occurred from the 18th to the 21st.

The barometer rose on the 16th, remaining nearly stationary until the 19th, when it fell slowly, recording 29.58 at 6 p. m., and 29.57 at 4 a. m. of the 20th, beginning to rise again in the evening of the 20th, and rising rapidly throughout the following day. The winds on the 17th and 18th were light and variable, but gradually backing to the southwest and south, increasing in force from the 19th to the 21st, and gradually veering to northwest by the afternoon of the 20th. A moderate sea swell, observed for the first time on the 14th, increased gradually in force.

Mr. DeGraw incloses two reports from the neighborhood of Cienfuegos and also the following translation from the log of the steamship *Buenos Aires*, Transatlantica Espanola Line, which arrived in Havana October 21, seven days and eleven hours from New York:

At 6 p. m. of the 16th we experienced, in the mouth of the Bahama Channel (Florida Strait), strong winds from the northeast, in which direction showers completely shut off the view. Inasmuch as we were unable to discern the lights of Jupiter, we turned our prow to the wind and lessened speed. On the morning of the 17th we discovered a cyclone to the south, and, supposing that its path would have to be the coast of Florida, we continued to face the wind and maintained the low speed of twenty revolutions.

On the morning of the 18th the characteristics of the cyclone were more marked and the wind veered to the east, with gusts of hurricane strength.

At nightfall we again intended to enter the channel, but at midnight the wind became so bad that we were forced to desist.

On the morning of the 19th southeast winds prevailed; we changed the vessel's course, and began to sail in this direction. That night the rain was so heavy and the wind so strong that it became necessary to moderate the speed of the engines to the lowest possible velocity.

We continued in this way until the morning of the 20th, during which day, the weather being somewhat cleared and the winds veering to the southwest, we recognized Cayo Sal, and headed for Havana.

Reports from Mr. L. F. Hughes at Central Soledad and from